

The identification and prioritization of Information Technology implementation rate among state offices of Bam Governor's Office

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Abstract

In the age of accelerated environmental changes, information technology plays a crucial role in the life of organizations. The aim of this study is to illustrate the prioritization of information technology implementation rate in public offices. So, the current research studied four factors including technical, economic, juridical, and cultural issues under 10 subcategories such as hardware, software, network, security, database and information systems, processes and systems, management, clients and suppliers, manpower, legal and financial issues. This research is experimental according to its aim and is a descriptive survey in its nature. The participants included the employees of Bam Governor's Office and the sample were selected based on the total numeration method include 67 people. The data were collected by using a questionnaire. Frequency, mean, standard deviation and variance were used for descriptive statistics and Pearson correlation coefficient test, Friedman test, Kolmogorov–Smirnov test were used for data analysis. The results of the study showed that all variables were positively effective in implementation of information technology. The most effective variables were technical, legal, and cultural factor and the least effective one was economic variable.

Keywords: Prioritization identification, information technology, government agencies, Bam Governor's Office

Introduction

Importance and function of information technology as a powerful factor in social and economical

changes has caused great investment for its improvement (Feinberg, 2004). The effects of information technology on other output function of organization are an important issue that has absorbed many of the educated and industry owners attention (Heim, 2010). In 1970s, manufacturers started applying information technology for making factory activities automatic. Information technology has changed significantly the business processes in factories. We are expecting these changes to be continued by developing E-commerce (Lin, 2003). Information technology combined with E-commerce has created enormous changes and developments in organizations. It has forced them to change their business structures and strategies (Phillips, 2011). How information technology can result in improved performance is an important challenging issue that has absorbed researchers' attention. In recent research the relations between information technology and performance rate is widely considered (Sanchez 2011). Because of the increasing rate of organizations use of information systems, information technology has changed to one of the greatest changing factor (Hamilton 2008). The relationship between human resources and information technology is a kind of polyhedral and multi factored. Information technology without efficient professional human resources has no productivity. On the other side, professional human resources would not have that productivity in absence of information technology (Samadzadeh, 2011). Profits obtained from applying information and communication technology has caused many cities and municipalities to make use of it. But, this early effort in most countries, especially in developing and undeveloped countries, has caused a great challenge. Although

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there are many investments in this technology, the expansion and influence of information and communication technology follow a slow process. We are going to probe into effects of information technology on organizational aspects and overall organizations' performance and to survey its results which include clear organization's prospect situation, before, after and while performing information technology. The expansion of information technology in Governor's Offices' missions is the next target to be surveyed. According to the situation of Bam Governor's Office, and based on the rate of technology application in its organizations, 10 factors were prepared for evaluation. These factors include software, hardware, network and security, database and information systems, performance and management methods, suppliers and partners in economical aspect, financial issues in legal aspects, and human resources in cultural aspects.

Statement of the problem and significance of the study

There is a crucial need to be a balanced relation between information technology and performance, and there must be factors to be identified which influences this relation (Gunasekaran, 2004). With development of globalization, increasing the competition rate in international levels, and with appearance of modern technologies, most of past policies have lost their efficiency. Most professionals believe that just some parts of organization information are being used in decision making processes and most parts are being ignored. The reason backs to lack of professional human resources. Thus, a device that can help organizations to save their most valuable resources and lead them from function-oriented situation to product oriented situation can make organizations more efficient in their performance. Capabilities of factories according to information technology in processing of input data will increase cognition and intellectual investments by means of which factories are able to make more thoughtful decisions. This shows the complexity of factories information technology use in order to support sharing information inside factories, processing input data, and using science to produce valuable outputs (Lin, 2009). Information technology has created these possibilities for managers to have the capability of management and controlling of more complex structures by the use of rapidly information processing. In addition, information tech-

nology would help improve the organization's performance with a more solidarity speed up feedback. The most important things that people must learn today are the things that help him prospect future alterations for making him ready to face it. This organizational requirement is performed in two ways: first, representing factors that help recognize and identify organizational alteration agents; and second, understanding appearance, expansion and destruction of organizations that have been built during years (Payam, 2011). Nowadays, our organizations especially in private and industry section are coping with hard and challenging situations. What has made us to look at information technology achievements in response to business changing situation has some reason which include limited attention to economic and production, lack of global insights in business, and insisting on restriction of achieving resources and business. Nowadays, in this developing industrial world, information technology is a device in control of governments that can improve legitimating rules of a system and growth of democracy in a state. Electronic government is one of achievements of information technology application. Information and communication technology today can be used as a powerful device in improving the education quality and increasing its efficiency. This is also one of greatest factors in changing factory's structures and function. Sovereign duties in governments most different parts, is under the control of Governor's Offices, and counties and it means that a correct advancing of duties and increasing efficiency in function have a significant importance. Improving functions of these organizations would help progress in processes in many aspects such as social, economical, political, security and cultural. The result would be the satisfaction of most people. The aim of this research is to study the different methods of information technology application as a dynamic process consists of four professional, economical, cultural and legal aspects. We are going to answer this question based on these foresaid factors of how Bam Governor's Office applied information technology in different processes

Theoretical foundations and background of research

The concept of information technology and its components

Information technology in its traditional definition means any equipment and facilities which fa-

cilitate information transfer, process and applying. This includes a wide range from an archive file to advanced computers (Eatones, 1983). Information technology refer to any techniques and devices used for optimization and supporting of systems in activating hidden capacity of economical, social, formal, and political organizations. Information technology consist of extended limitation of invents and media that connects information systems to people like voicemails, emails, audio conference, video conference, internet and so on. Information systems and information technologies are confused most of the time and that's why they are called information technology all together. It plays the role of complementary of human intellectual capabilities. There is still another belief that the concept of information technology refers to that kind of usages that to some extent cover the realm of electronic data processing. Information technology consists of four main components: hardware (processors, visual representation devices, dicks and printers), software (operating system and facilities with a usage connector), facilities (extra supportive programs of the main program e.g. facilities for removing viruses and word processor boxes and so on). The last part is communicative technology that connects different components of hardware.

The role of communicative technology in organizational processes and the work of employees

Organizations and factories eventually accept information technologies and make use of them and in this way, they speed up their activities and processes. Information technologies in organizational processes, e.g. production and sale, have been progressed significantly. With development of systems and network technologies, there is the possibility of collecting and making use of information simultaneously. Today computer systems have provided the possibility of supervision on the functions, so faults and problems are altered before its happening. These great changes had big influence on occupational and professional structure of personnel. Information technology will cause expansion and optimization of organizations' interior operation, internal costs reduction, and acceleration in production. Costs reduction is followed by profitability chance even under normal prices for productions. When the delivery of the production to the business community is speed up, gaining profits would happen sooner. The appearance of infor-

mation technology helps improve business and sales processes. It also changed the speed of business processes especially in case when a new product ruins any opportunities. Applying information technology systems has facilitated the process of buying and transferring. Other fields which organizations are using to perform their strategy include: rearrangement of business schedule, occupational networks and electronic transfer data systems. In most factories, the information technology plays the role of a strategic weapon. It controls lack of concentration in decision-making and enables employees to have access to necessary information for they can make use of it to enhance their creativity, efficiency and quality. It makes business concepts rich and increases employees' information and cognition. If employees become more educated and cognitive, their professional domination in their work would increase as a result.

Theoretical frame of research

Theoretical foundations of this study are based on a research conducted in 2005 by Adams & Sandler in the state university of California. In foresaid research, the success rate of information technology's application is divided into four factors consist of professional, economical, legal and cultural aspects. For each of which there is special characteristics. What in professional aspect is going to be surveyed is consist of items such as head ware used in an organization, kinds and quality of software used for that hardware, the expansion rate of network shaping in that organization, the security levels, the quality of systems and processes used in the organization, and so on. But, for probing into economical aspect, we will study about macroeconomic management observation on the information technology application in organization, and also the usage rate of clients and suppliers of information technology. In legal and financial aspect: the activities rate of increasing necessary budgets for information technology applications. In cultural aspect, how the usages of information technologies is going to be advertised and internalization through people, especially between employees. It is worth mentioning that the characteristics represented here is based on local features of the region while out of this localization and in other geographical situation, these feature might be different.

Background of the research

Allahi (2009) showed that lack of budget, in-

creasing the university student rates, different increasing student necessities, and all together need organizational changes. Actually we need that kind of changes that is matched with new needs and requirements. Education based on information technology will help us to have learning without time and place limitations. Esmaili (2009) conducted a research by which he concluded this fact that organization's capacity will influence on the information technology application levels. Fani and his colleagues (2010) concluded that information technology age as a guide had impressed all humans' life aspects. Asady's research with the title "information technology application challenges in hospitals of medical sciences Shahid Beheshti University" in Booshehr, shows that there is the possibility of creating new occupational situations. Ulengin (2005) focused on the influence of information technology on factories' function in a study. It explains how information technology usages improve organizational structures by using it in communicative systems, exchanging information, coordination and integrating activities. Based on the results obtained from Selg (2005) qualitative research, the role of human resources and organizational factors in information technology is significant. Cavaye (1998) conducted a research in New Zealand and surveyed the effective factors of using computers in a small organization. According to this research the effective factors in information technology which is very helpful are: experience working with computer, start thinking positive inside for self satisfaction, all of which is a way to improve and expand information technology. Whittaker (1999) search the common reasons for losing in IT projects of Canada. 3 main causes are as follow: projects poor planning, projects poor connection with people's necessities and lack of projects supporters. Kunda (2000) illustrate four factors for information technology application in developing countries. These factors are: lack of professional human resources, economical restrictions, defaults in substructures, and incorrect applications.

Research Questions

a) Major questions

1. *What are the most effective factors in information technology application in offices?*

2. *How is the prioritization of these factors?*

b) Minor questions

How effective is the hardware in implementation of information technology in Bam Governor's Office?

How effective is the software in implementation of information technology in Bam Governor's Office?

How effective is the network in implementation of information technology in Bam Governor's Office?

How effective is the security in implementation of information technology in Bam Governor's Office?

How effective are the data bases and information systems in implementation of information technology in Bam Governor's Office?

How effective are the processes and systems in implementation of information technology in Bam Governor's Office?

How effective are the clients and suppliers in implementation of information technology in Bam Governor's Office?

How effective are the human resources in implementation of information technology in Bam Governor's Office?

How effective are the legal and financial issues in implementation of information technology in Bam Governor's Office?

Research Hypotheses

1) Professional factors are in connection with information technology in Bam Governor's Office

2) Economical factors are in connection with information technology in Bam Governor's Office

3) Legal factors are in connection with information technology in Bam Governor's Office

4) Cultural factors are in connection with information technology in Bam Governor's Office

Methodology

Participants and data collection method

This project is experimental according to its target and is descriptive in its nature. Data were gathered by the use of questionnaire. The effective factors of information technology application were identified and prioritized by means of those questionnaires. Statistical population of this research consists of 67 people of Bam Governor's Office employees. The statistical population of this study included 67 employees and managers of the Governor's Offices of the province of Bam. The number of the sample is equal to the statistical society and their number is 67 members.

Data collection instruments

In order to collect data, a questionnaire was used. In this questionnaire, the Likert scale included 5 options (too much, much, to some extent, low,

very low). After the experimental distribution of the questionnaire that is done between 20 members of the estimated sample ones, its reliability was computed through Cronbach's Alpha, which was equal to 98%.

Also, the amount of alpha coefficient for its components such as hardware, software, network, security, data base and informational systems, procedures and systems, management, human power, civil and financial, customers and providers and partners was .913, .854, .939, .898, .928, .929, .884, .899, .830, .851, respectively.

As it is observed, for each variable, the amount of alpha is more than 0.8 that it is acceptable amount. Further, the amount of alpha in questions is equal to 0.984 which can prove the reliability of above-mentioned questionnaire in the highest level.

The validity of the measurement tool is the difference between the observation and real features of events which are the measurement subject (Iran Nezhad Parizi, 2006.)

In order to study the validity of the questionnaire, content validity was used. It was investigated and confirmed by some experts and professionals in this subject by taking their opinions into account.

Data analysis

Analyzing the information produced by the questionnaire was done in two parts including descriptive and inferential and statistics. In the first part, it is used of some techniques such as computation of frequency, the percentage of frequency, mean, standard deviation and variance. In addition, descriptive and comparative way of analysis was used. Regarding the first research, the most important related factor should be investigated by the amount of execution of the IT in state sector. So, first of all, it was tested which factors are related to the execution of IT and it was done by correlation test. Then, among the factors which are statistically significant, which factor has more correlation coefficient and actually the most important related factor to the amount of execution of IT which is determined by correlation test. For analyzing the data, SPSS software (version 15) was used. Analyzing the data through correlation coefficient test can determine the form and amount of the relationship between IT and organizational performance. If the amount of correlation coefficient is more than 8%, it shows a high correlation between the variables, if it is between 5% and 8%, it means a moderate relationship and finally if it is under 5%,

it means weak correlation. "Freidman Test" is equal to two-way analysis of variance. This test is used if we want to investigate the ideas of a group in some subjects and then based on the ideas of the members of this group, we want to classify their opinions in the order of priority. In other words, Freidman test examines the null hypothesis in which the K variables are correlated with a similar population. For each situation, the variable K is classified from 1 to K (that is the source). In the second research question, the priority of factors is needed. Freidman test is appropriate in this regard because it can prioritize each factor by using ranking means. Finally, Kolmogorov-Smirnov test is used for checking the normal distribution of variables.

Descriptive findings

The demographic information of the managers and employees is summarized in the following table.

Table 1. Demographic information of managers and employees.

Features	Groups	Frequency	Percentage
Years of employment	Under 5 years	16	33
	6 to 10	15	30
	11 to 15	2	4
	16 to 20	5	10
	Above 21	12	23
Access to computer	Diploma	24	8
	Bachelor	21	42
	Master	5	10
Access to PC	Yes	41	82
	No	9	18

Before performing Pearson correlation test, it is required to see whether the data have been distributed normally or not. Here, for searching the normality of all the related variables, Kolmogorov test was used.

H0: There is no difference between the observed and expected frequency (The distribution of population is normal) .

H1: There is no difference between the observed and expected frequency (The distribution of population is not normal) .

According to the table 2, the maximum difference between normal distribution is as the absolute, positive and negative. Since the amount of Kolmogorov-Smirnov Z of the all variables in the

numerical table is between -1.96 and +1.96, and the level of significance is greater than 0.05, the null hy-

pothesis is not rejected and we can confirm the normality distribution of data with 95% confidence level.

Table 2. Normality test for the related variables.

		IT perfor- mance	Technical	Financial	Cultural	Civil
N		50	50	47	46	46
Normal Parameters(a,b)	Mean	3.2426	3.2668	3.5735	3.0884	2.9837
	Std. Deviation	.67872	.70732	.66097	.79729	.90388
Most Extreme Differences	Absolute	.086	.075	.112	.084	.094
	Positive	.086	.070	.090	.064	.080
	Negative	-.069	-.075	-.112	-.084	-.094
Kolmogorov-Smirnov Z		0.57	.609	.529	.771	.573
Asymp. Sig. (2-tailed)		0.9	.853	.942	.593	.898

Inferential findings

The results of the correlation test analysis are shown in Table 3.

Table 3. Results of correlation coefficient analysis.

Secondary hypotheses	Results
The correlation of technical indicators and the amount of Information Technology performance	Significant -positive (P < 0/01 and r = .975)
Correlation between economic indicators and the implementation of information technology	Significant-positive (P < 0/01 r = 0/834)
Correlation between cultural variables and the implementation of information technology	Significant-positive (r = 0/892 and P < 0/01)
Correlation between the parameters of the legal and information technology	Significant-positive (P < 0/01 and r = 0/90)

The hypotheses of this study are related with the relationship between ICT indicators including technical, economic, cultural, and legal in an organizational operation. The above table shows the highest positive correlation between technical in-

dicators and positive correlation between the rate of economic indicators of information technology.

Discussion

The first minor hypothesis

According to the related results of the table, the amount of P equals to 0/000 and this amount is less than the significance levels ($\alpha = 0.01$). As a result, the assumption in which $\rho = 0$ is rejected. We can say that there is a meaningful relationship between professional factors and the information technology application rates. Based on Pearson's correlation coefficient, we can conclude that the correlation is straight and positive. It means that the better the professional factors, the more information technology are applied. As we know, the absolute value of coefficient is a number between 0 and 1. The more the absolute value is nearer to 1, the more the correlation amount is. In this research, it is 0.975, which indicates a high degree of correlation.

The second minor hypothesis

According to the afore-mentioned results of the table, the probability amount equals to 0/000 and this amount is less than significance levels in which $\alpha = 0.01$. As a result, the null hypothesis is rejected. We can conclude that there is a meaningful relationship between economic factors and the information technology application rates. Based on Pearson's correlation coefficient, this correlation is straight. It means that the better the economic fac-

tors, the more information technology are applied. In this research, the amount of r is 1.932, which indicates a high degree of correlation.

The third minor hypothesis

According to the above table, the probability amount equals to 0/000 and this amount is less than significance levels in which $\alpha = 0.01$. As a result, the null hypothesis is rejected. In other words, there is a meaningful relationship between cultural factors and the information technology application rates. Based on the amount of Pearson's correlation coefficient amount, this correlation is straight. It means that the better the cultural factors are, the more information technology is applied. As we know it, the coefficient amount of an absolute value is a number between 0 and 1. The more the absolute value is nearer to 1, the more the correlation is. In this research, the amount was 0.892, indicating a high degree of correlation.

The fourth minor hypothesis

According to the above table, the probability amount equals to 0/000 and this amount is less than significance levels in which $\alpha = 0.01$. As a result, the null hypothesis is rejected. We can conclude that there is a meaningful relationship between legal factors and the information technology application rates. Further, by looking at Pearson's correlation amount, the correlation is straight. It means that the better the legal factors are, the more information technology is applied. In this research, the amount of r was 0.907 which indicates a high degree of correlation.

Major hypothesis

There is a significant relationship between organizational performance and information technology in Bam Governor's Office.

The amount of correlation coefficient of all variables is more than .8. Therefore, as all secondary hypotheses have a direct relationship with the amount of information technology performance, we can conclude that information technology has a positive correlation with organizational performance of Bam Governor's Office.

Friedman's test is meaningful when you want to study the different people's opinions of a group about some aspects. Then, based on the ideas you can make a prioritization of the variable. The assumption of H_0 in this study shows the equality of means. This test can prioritize the factors by means of the mean rates.

Table 4. Friedman's test

Number	Chi-square	df	P
45	109.60	9	.000

Table 4 shows the main results. The square number of K with the 9 degree of freedom equals to 109.060. The significance level equals to zero, which indicates the rejection of null hypothesis. It means that factors were different in different people's opinions. Mean rates for management 7.82, security 7.11, shareholders 6.82, hardware 6.53, systems and processes 5.36, databases 5, software 4.96, human resources 4.67, and 4.67, 3.90, 2.83 for legal, financial and network, respectively.

Conclusions

The main objective of this study was to identify the relationship between identifying and ordering factors of information technology in Bam city's Governor's Officeship. In order to achieve this purpose, the questionnaire included demographic questions and 76 questions based on research questions were provided and then distributed among clerks of Bam Governor's Offices. After gathering information, data were analyzed by using SPSS software. Regarding minor hypotheses, the Pearson correlation coefficient indicted a positive relationship between the level of IT technical indicators, economic indicators with amount of Information technology and cultural indicators with amount of the technology implementation of legal measures of Information technology. Also we found out that since minor hypotheses with higher correlation affect the implementation of information technology and the major hypotheses are effective and can influence the implementation of information technology. Also, Friedman test was used for the prioritization of these indicators. Here, 10 variables were prioritized by using the Friedman test. Based on the mean of the rate of administration, security, subscribers, Suppliers, partners, hardware, processes and systems, databases, information systems, software, human force, legal and financial network has the highest priority in the implementation of information technology in the public sector, respectively. By reviewing the available literature in the field of information technology, we will find out that the findings of researchers such as Sanchez, Martinez Li, Su, Chen, Yang, Wong, Lai, NtokoHeim and

Pengare in congruent with the effects of information technology on the companies' operations.

Descriptive conclusion

The results of the demographic questions indicated that 42% of people have bachelor degree, which has the most frequency and 10% of people with MA degree have the minimum frequency. Also, 52% of the respondents have university degrees. About organization, people who were clerk indicated the most frequency and those who occupied the assistance position indicated the minimum frequency. Questions about work experience is another kind of question and 34 percent of people with work experience blew 5 years indicated the most frequency and the minimum frequency is related to 4% of people with work experience up to 15 years. According to the results of the research, 82 percent of people access computer out of their works. Also, 70% have access to computer out of their work.

Explanatory conclusion

According to the results of the research hypotheses, all of the research variables were distributed normally. Considering the correlation coefficient test that was carried out on 4 variables, a research was done investigating the effects of these variables on the implementation of information technology. There was a positive correlation between all of the variables and the variable of the implementation of information technology. It means that by increasing each of them, the degree of implementation of information technology increased accordingly. Technical indicators have the most effect on the implementation of information technology in Governor's Office sector. And, legal indicators, cultural indicators and economic indicators have the minimum effect on the implementation of information technology. The results of this research have positive effect on the importance of planning tools of organization in improving the operations. Reasons such as increased volume of information, information management for security integration and making the limited source of information available, complicated work processes and information for coordinating the agencies, the need for operational management of the organization with the possibility of monitoring activities by managers, make organizations to take action in order to implement or improve IT planning systems. In addition, the utilization of planning systems of organizations provide useful information for executing the advanced sys-

tem of management such as Business Intelligence, Strategic management decision systems, management of operations and management of knowledge. Information technology can influence all the sections and operations of company.

Recommendations

Regarding the results of the present study, the following recommendations can be suggested:

- Improving culture about using the information technology:using the information technology needs cultural infrastructure. Organization members (managers\clerks), providers, suppliers and customers are doubtful about Electronic Security Services and they are not sure enough that they can use electronic services with confidence.
- Convincing companies for executing information technology projects: Unfortunately, some of the companies do not consider the advantage of information technology investments and instead investment in the field of information technology is preferred by them.
- Request the government to provide necessary facilities for the use of information technology:Using information technology tools in companies demand tools and facilities that the government can provide for them. For example, the availability of internet is the essential condition for using information technology's tools and government actions aimed at providing information play an important role in facilitating the use of these tools.

Finally, the followings suggestions are proposed:

Increasing the hard wares' capacities and capabilities of the organization, updating the hardware of organization and considering quantity and quality of the hardware simultaneously when they are in use are recommended in hardware section. Using software which is compatible with the organization mission, considering the role and quality of Software interface used in organization, paying attention to the supporting and software developments in a way which is compatible with the needs of organization and updating and integrating of software which are used in organizations are recommended in software section. Paying attention to the breadth and development of network, considering the quantity and quality of internet in the organization, alert network, considering the coordination of software with the network and making confidence that the network is extensible are recommended in network

section. Development of standards and guidelines of organization in the field of security, Expanding and updating the Network security infrastructure, updating and paying attention to the physical security of organization are recommended in technology part. Updating the supporting database banks, taking advantage of the database bank information, the compilation of performance standards of database banks in processes and systems, making the processes and systems standard in organizations and considering the system analysis and knowledge management are recommended in database banks section. Paying attention to the creativity and flexibility of organization's managers, developing skills which are related to the management of IT at organizations, supporting the process of digitization of organization for directors, considering the imperative of crisis management at organization, paying attention to the quality of the assessment system and it is the feedback at organization, which are recommended in management section. Considering the importance of IT training at organizations, using IT experts and consultants at organizations, expanding the culture of IT at organization and out of it, investment for developing IT in legal and financial sections and using domestic and foreign investment for developing IT are recommended in manpower section. And finally offers which are related to costumers, providers and companies need clarity and speed in responding to customers and partners demands, making electronic connection between partners and customers.

There were some limitations for carrying out this research. For example, this study was done in Bam city. This subject decreases the generalization of the research results. Carrying out the research similar to this one can compensate these kinds of limitations and increase the degree of generalization. In addition, by considering the size of the selected sample, it is recommended that this study to be repeated in larger sample and in other companies which use the information technology in production process.

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